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ABSTRACT

Long Lane School is a coeducational, residential treatment facility for juvenile delinquents in Middletown, Connecticut. The Proposed Occupational Exploration Program described in this document is intended to provide the dual function of career exploration for the approximately 425 residents of Long Lane and a means for integrating the academic and career instruction that takes place at this treatment facility. The proposed program is described and general recommendations are made for establishing a working program. The major portion of the document consists of basic skill checklists for each of the following vocational exploration areas: boiler attendant, building custodian, business and office, carpentry, electrical, food service, greenhouse, grounds maintenance, home mechanics, painting, and plumbing. For each of these vocational areas, the following is included: vocabulary terms, a listing of common tools, and a description of ways in which a student's occupational exploration activities can be extended into the areas of mathematics, language arts, social studies, and science. Each area concludes with a listing of some careers associated with the area. The document concludes with copies of record forms for the occupational exploration program and references used in developing the document. (Author/KC)

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PROPOSED
OCCUPATIONAL EXPLORATION PROGRAM
FOR
CADY SCHOOL - LONG LANE
MIDDLETOWN, CONNECTICUT

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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AN ABSTRACT OF THE
PROPOSED OCCUPATIONAL EXPLORATION PROGRAM FOR
CADY SCHOOL - LONG LANE
MIDDLETOWN, CONNECTICUT

Materials contained in this document were developed to provide both vocational and special educators with ideas of how vocational experiences can be related to the academic course content. Included are such topics as: a description of the proposed program at Long Lane School and general recommendations for establishing a working program. The major portion of the document consists of basic skill checklists for each of the following vocational exploration areas: boiler attendant, building custodian, business and office, carpentry, electrical, food service, greenhouse, grounds maintenance, home mechanics, painting, and plumbing. For each of the above vocational areas the following is also included: vocabulary terms, a listing of common tools, a description of ways in which a student's occupational exploration activities can be extended into the areas of mathematics, language arts, social studies, and science. Each area concludes with a listing of some careers associated with the area. This document concludes with copies of record forms for the occupational exploration program and references used in developing the document.

CE029348

PREFACE

Long Lane School is a co-educational, residential treatment facility for juvenile delinquents operated by the Department of Children and Youth Services in Middletown. The total intake is approximately 425, including those students brought in by the Aftercare Division.

The residents range in age from 11-16 years old. The crimes of youngsters committed to DCYS for delinquency cover a wide range of offenses. Thus it is necessary to maintain a treatment milieu at the school serving the rehabilitation needs of the majority who can benefit from Long Lane's Guided Group Interaction program and the need for security for those posing a threat to the community. Currently, there are five open cottages, four for boys and one housing girls, in operation. The Diagnostic and Secure Treatment Unit provides 36 beds for that small percentage of residents who require programming in a secure setting.

Long Lane School employs a group process, Guided Group Interaction, as the major vehicle through which students deal with their problems. Daily group meetings are held through which guided peer influence becomes the major agent of change. Each student at Long Lane is a member of a group consisting of 10-12 students. Students are grouped so as to allow maximum daily involvement and interaction with their peers. The group must acknowledge the responsibilities and irresponsibilities of its members.

The Proposed Occupational Exploration Program described in this document is intended to provide the dual function of career exploration for the residents of Long Lane and a means for integrating the academic and career instruction that takes place at this treatment facility.

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PART I

DESCRIPTION OF PROPOSED OCCUPATIONAL EXPLORATION PROGRAM

INTRODUCTION

The basic underlying philosophy of the proposed Occupational Education Program is that all students at Long Lane should be provided with the opportunity to develop their occupational, social and personal competencies in order to become economically independent, and thereby succeed as productive citizens in the home, at work, and in the community.

This curriculum for the Occupational Education Program is broad. Emphasis is not placed on providing in-depth training in any particular trade area. This is due to the short length of time (four to six months) that each student is at Long Lane. The intention of the program is to provide the student with a series of broad exposures which can make him eligible for entry into many areas of employment. The ability to use hand tools, for example, to make simple repairs, can enable an individual to become employable in many different industries. The students participating in this program should carry no label such as "carpenter", "painter", "plumber", etc., but they should acquire entry skills and undergo employment orientation in a number of available areas.

The Occupational Education Program should attempt to build social and personal competencies upon the foundation of a "hands-on" experience. In developing competencies for the Occupational Education Program, the teachers and staff should examine on-going academic courses and work together to make the content of these courses relevant to the "hands-on" portion of the program.

In the five components of the Occupational Education Program, especially the Internship, Work for Pay and CETA components, attempts should be made to create an environment which is reflective of industry with its conditions, pressures, demands and expectations. The student should be made to feel that he is on the job rather than in school. Each student should be made to

feel that his assigned tasks are part of a larger endeavor such as that found in any industry.

Throughout both the academic and the "hands-on" phases of the program, positive work habits and attitudes should be stressed and when possible, rewarded.

The Program

The Occupational Education Program should consist of:

1. A Pre-Occupational Education Component
    a. Woodworking
    b. Home mechanics
    c. Typing
    d. Mini-bike maintenance (small engine repair)
2. An Occupational Exploration Internship Component
3. A Work for Pay Component
4. A CETA Component
5. A Basic Skills for Daily Living Component

1. Pre-Occupational Education Component

Classes in this component should be held in the morning as general classes for students who are just taking these courses as a required part of their school program. Emphasis with these students should be on the basics in each of these areas and basic skills which the students could use in the Occupational Exploration Internship, CETA, or Work for Pay Components.

Those students who have an expressed interest in any of these areas should be grouped together for classes in the afternoon session. For these sessions, the students should, if possible, be grouped into two age groups. In this way, the older students will not unduly influence or pick on younger students in class, and the dexterity and strength of the class members will

be somewhat similar.

Students with a sincere interest in these areas, as judged from the intake evaluation and a possible brief trial run in the morning's general classes, should be taught skills ranging from basic to complex which they could utilize in a job placement, in industrial arts, business or vocational program in their local school, or for possible entrance into a vocational-technical school.

Due to the nature of the students being served and the size of the laboratory areas, the classes in this component should be limited to 12 students each.

2. The Occupational Exploration Internship Component

This component relies heavily upon using the maintenance, office, kitchen, and service staff at Long Lane for its success. The supervisor of the program should work closely in the selection of service staff who will serve as "trainers", in this component. He should select someone who can work well with him and who he deems can work well with the students.

The areas which should be available for student exploration in this component are:

1. Boiler Room
2. Building Custodian
3. Carpentry
4. Electrical
5. Food Service
6. Greenhouse
7. Grounds Maintenance
8. Office and Clerical
9. Painting
10. Plumbing

It is suggested that this component be initially developed on a pilot basis using no more than five of the 10 recommended areas. In this way, any developmental problems will be confined to the five areas.

Students should be selected for participation in this component based upon the intake interview, PPT recommendation, and the number of positions available. Instead of attending the Pre-Occupational classes in the morning or afternoon, the students selected for this component should be assigned as an intern to a trainer for the same amount of time that he would be attending the Pre-Occupational classes. A student should spend approximately 40 to 60 hours in each exploration area selected. Students doing good in this component should be eligible for selection to fill vacancies in the Work for Pay or CETA components.

The "trainers" used in this component could be the same ones used in the Work for Pay component, or other trainers from the same area could be selected. In both of these components, the trainers should feel that the supervisor will be readily available to help them when any problems arise. The supervisor should visit each trainer at least once a week to check on student progress and to nip potential problems in the bud. It is imperative that he develop a good rapport with each trainer selected and counsel the trainers in methods of working with the students.

In this component the students serve as interns under a trainer. To achieve maximum career exploration value from this component, a student should enter into a different area every four to six weeks. In this way, the student will receive active exposure to a number of potential career choices, and thus be in somewhat of a better position to choose to or not to pursue further training or accept a job in any one of the areas which he had been exposed to.

The basic skills which should be taught in each of the 10 Occupational Exploration areas can be found in the Appendix of this paper. In addition to a listing of basic skills, a Personal Characteristics Rating Sheet and an Occupational Exploration Experience Summary Sheet is included.

For each of the 10 Occupational Exploration areas the following has been done and is included in the Appendix:

1. A listing of the basic skills that the students should be exposed to in each area.
2. A listing of vocabulary terms associated with each area.
3. A listing of the common tools that the students should be exposed to during their experiences in each area.
4. A brief description of ways in which a student's Occupational Exploration Activities (or any of the other Occupational Education Program Components) in each area can be extended into the following academic areas:
    a. Mathematics
    b. Language Arts
    c. Social Studies
    d. Science
5. A listing of some careers associated with each area.

In order to promote accountability in this and in the other program components, the supervisor should work with the trainers to develop behaviorally stated objectives for each area and to develop pre and post-tests for each area that are based on the objectives developed.

In order to be relevant to students' needs, the academic program should be correlated with the Occupational Exploration Internship as well as the other components of the Occupational Education Program. The

supervisor should be the one who sees that this relationship is established and thrives. The suggestions in the Appendix are only provided as examples to get the academic staff thinking of ways to utilize what the student is doing in an occupational area to teach the academic content that they are responsible for. The academic teachers must leave the classroom, talk with the trainers, and observe what is being done in each area in order to develop relevant examples for use in their classrooms.

Whenever possible, reading instruction should include written materials and terms used in the occupational components. Instruction in mathematics should include, when applicable, mathematics used in the Occupational Education areas.

To facilitate the development of this necessary correlation, at least two periods per week should be set aside for the program director and the intake evaluator counselor to meet with academic instructors and service staff to foster this correlation of subject matter with Occupational Education Program experiences.

3. Work for Pay Program Component

The Work for Pay Program Component should be viewed as a privilege for:

a. good conduct

b. good academic performance

c. good performance in the Occupational Exploration Program

A. A list of eligible students should be maintained to fill vacancies in the Work for Pay Program. The PPT should submit the names for this list.

B. The Work for Pay Program should not just be limited to menial custodial work and should include the 10 areas utilized in the Occupational Exploration Internship Component. The skills

identified for the area for the Occupational Exploration Internship Component should be emphasized and where appropriate, advanced skills should be identified, taught and evaluated. Behavioral objectives should also be written for students involved in this component.

C. Outstanding students in the Occupational Exploration Internship component should be given first preference for available vacancies in the Work for Pay or CETA Program Components. Failure to observe school rules or acting out in the program should be grounds for removal from either of these components and placement in the general program.

4. The CETA Program Component

The guidelines for the Work for Pay Component also apply to the CETA Program. Financial hardship must also be considered in the selection of CETA participants. Due to the limited number of available positions in these components, selection for participation should be viewed as a privilege which is earned.

In the CETA Program Component, the students should be closely supervised and taught saleable skills. The skills which the students should be exposed to while in this component should be those skills identified, for the area that the student will be engaged in, for the Occupational Exploration Internship Component. In addition, a pre and post-test, either written or verbal and containing a practical component, should also be developed and utilized in the CETA component. Each component in the Occupational Education Program should be a learning experience based upon a pre-assessment, measureable objectives, training, and a post-assessment. In no instance

should students just be assigned a custodial responsibility and not be trained and evaluated regularly.

5. The Basic Skills for Daily Living Component

The Basic Skills for Daily Living Component should be a required part of each student's school curriculum. Whenever possible, a close correlation should exist between the curriculum of this course and experiences students are scheduled to undertake in other Occupational Education Program components. Basic survival skills, grooming, budgeting, filling out job applications, etc., should be taught and practiced throughout this component and applied in the other Occupational Education Program Components.

General Recommendations

1. That necessary tools, materials, supplies, and teaching aids be purchased for use in the Occupational Education Program Components.
2. More communication is needed between the individual supervising the program and the students and the cottage coordinators. With this communication the supervisor will know if the student has hours to work off in the cottage and when feasible he can schedule another student for the vacancy.
3. The staff should have more input into class scheduling. A tentative schedule should be developed and presented to the staff for their input. A revised schedule should be developed which takes into consideration the recommendations of the staff members who have to follow the schedule.
4. Class size in all laboratory areas should be limited to a maximum of 12 students. For safety and instructional purposes this number should be the absolute maximum.
5. A staff member or a member from an associated state agency such as DCYS

should follow-up on students after they leave Long Lane. The information obtained from this follow-up can be used to make necessary program modifications.

6. A list of reliable substitute teachers for both the academic and the occupational education areas should be compiled. Having a number of reliable substitutes to call upon will enable the permanent staff to remain at their assigned posts and not have to alter their schedules in order to substitute for an absent instructor.

7. A course outline with stated, easily measured, realistic objectives should be developed for each Occupational Education Program Component. Once developed, these outlines should be adhered to.

8. Audio visual devices should be purchased, in a trial program, in order to individualize instruction. Since students do not all come to Long Lane at the same time, such devices may help new students to cover the basics which most of the class may have already covered. They may also use these devices to pursue occupational areas of their choice which may be related to those available at Long Lane.

9. A student's strengths, as ascertained in the intake interview, should be shared with his instructors for the purposes of individualizing instruction and providing opportunities for the student to achieve success in his classes.

10. The intake interview should contain some testing, either verbally, written, or practically involving the areas available in the Occupational Education Program. The results of this testing should be used to facilitate student placement in the program. All incoming students should have the complete intake interview.

11. Input for the selection of students to participate in the CETA and Work for Pay Components should involve cottage coordinators, teachers of the student concerned and the director.

12. Tutoring could be an activity which can be initiated at Long Lane. As part of the Work for Pay Program students can be selected to serve as academic tutors for other Long Lane students.

13. Students engaging in the Occupational Exploration Internship Component should be scheduled so that they are with the trainer for at least a 2½-3 hour time block per scheduled session. If a student is with the trainer in the morning, his academics should be scheduled for the afternoon or vice versa. One academic class period (45 minutes) is not enough for the student to do very much.

14. Communication among all staff involved in the program is imperative.

15. One individual should be appointed as a director to oversee this Occupational Exploration Program. He should have the following responsibilities:

    a. Be responsible for student placement in the program (with input from the intake evaluation, the "trainer" and school and cottage staff who are involved with the student).

    b. Supervise students in the Work for Pay and CETA Program Components.

    c. Maintain a good line of communication and inform all individuals involved with a given student when he is taken out of, or completes the program.

d. Prepare "trainers" (maintenance staff and any office personnel at Long Lane) with techniques and methods for working with the students.

e. Develop with each "trainer", a list of behaviorally stated objectives, derived from the lists of basic skills for each occupational area. These lists can be seen in the Appendix of this paper.

f. Develop, in cooperation with the intake evaluator and the "trainer", a pre and post-test for each occupational area at Long Lane. The pre-tests, which could be written, verbal, or practical should be administered by the intake evaluator. These tests, should be given to each student prior to his entrance into an occupational area to facilitate his placement. The post-test for a given area should also be given after the student completes an "internship" to determine the student's development in a given area.

g. Meet with academic and occupational instructors to coordinate instruction in academic and occupational areas.

h. Develop a list of duties and desireable qualifications for each internship area so that students may be made fully aware of the responsibilities involved in each internship position.

i. Be responsible for counseling or for arranging needed counseling for students in the Occupational Education Program.

3. A program intake evaluation-counselor should be employed to be responsible for the following:

a. Conduct an organized intake interview of each student who will participate in the Occupational Exploration Program.

b. Develop a standard intake interview questionnaire to be used with each student. An examination of existing standard questionnaires may be helpful. Questions regarding the occupational areas available at Long Lane should be included in the questionnaire.

c. Administer pre-tests to each student prior to his entrance into a mutually agreed upon (supervisor, intake evaluator, student, cottage staff, PPT) occupational area.

d. Administer post-tests to students at or near the completion of their exposure to an occupational area. These tests, which should be developed in cooperation with the program director, and each "trainer", can be used to determine where a student is upon entering a given area, and how much he has developed during his internship in that area.

e. Based upon the intake interview, the evaluator should recommend at least three occupational areas for possible student placement.

PART II

OCCUPATIONAL EXPLORATION SKILL AREAS AND
RELATED INFORMATION SHEETS

BOILER ATTENDANT AREA

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT FOR BOILER ROOM

Please evaluate this student by placing an " X " and the number of hours in the proper column.

SKILLS	ACHIEVEMENT						
	Number of Hours	5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
1. Takes all essential Gauge Readings							
2. Records all essential Guage Readings							
3. Change Steam Charts							
4. Checks all operating machinery for proper operation (overall rating)							
a. checks feedwater pumps							
b. checks chemical pumps							
c. checks burner motors							
d. checks fan motors							
e. checks circulators							
f. checks heat exchangers							
5. Makes necessary adjustments							
6. Does minor repairs (overall rating)							
a. repairs refactory work							
b. cleans fire tubes							
c. cleans burner tips							
d. replaces burner tips							
e. repalces fan belts							
f. cleans motors							
7. Blows down water column							
8. Bottom blows boilers							
9. Adds boiler compound							
10. Sticks Fuel Tanks							

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT FOR BOILER ROOM

Please evaluate this student by placing an " X " and the number of hours in the proper column.

SKILLS	Number of Hours	ACHIEVEMENT 5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
11. Records fuel tank reading							
12. Makes entries in Boiler Room Long (Overall)							
a. boiler readings							
b. work performed							
c. phone calls							
13. Sweeps Floors							
14. Cleans up spills							
15. Dusts equipment and furnishings							
16. Interprets boiler room color code							
17. Defines Terms associated with the Boiler Room							
18. Uses Tools Properly							

II. VOCABULARY TERMS ASSOCIATED WITH THE BOILER ROOM

stationary engineer
blow down
bottom blow
boiler compound
boiler
fire box
furnace
insulation
convection
radiation
fire tube boiler
water tube boiler
stack
flue
rear relief door site glass
baffling

stay bolts
condensate tank
deaueter

termal bridge
alkalinity
conductivity

valves
water sight glass
steam chart

log
conduit
modulator motor
volume value
solenoid
safety valves
smoke monitor
steam flow chart
steam pressure chart
relay
motor starter switches
fire-eye control
ignition
agitator motors
water regulator
blow down valve
phosphate
sulphide
caustic soda
PH Test
PSI
heating suface
centrifugal pump
ventair pump
transfer pumps
compressor
grease fitting

III. COMMON TOOLS USED IN BOILER ROOM

screwdriver

nut drivers

open end wrenches

adjustable wrench

slipjoint pliers

ratchet wrench

sockets

Allen Wrench

bench vise

chain pipe wrench

taps and dies

twist drills

files

hacksaw

grease gun

Phillips screwdriver

pipe reamer

Stillson wrench

tap extractors

torque wrench

socket wrench

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. pipe sizes
2. tap and die sizes
3. drill sizes
4. wrench sizes
5. liquid measure for boiler compound

B. Division and Multiplication

1. computing amount of boiler compound to use
2. computing amount of wages for hours worked.

C. Decimals

1. Use drill sizes to show practical use of decimals and for conversion from fractions to decimals and vice versa.

D. Percents

1. Use fuel tank reading to convert gallons to percent of capacity.

E. Measurement

1. Time - compute salary based upon hours worked and wage
2. Temperature - use boiler temperature readings and convert to celsus or use boiler temperatures as examples to discuss temperature.
3. Liquid - use measurement quantities used in boiler room.
4. Proportion - compute proportion of boiler compound used to volume of mixing tank. Can also be used for ratio.
5. Pressure - use boiler gauge readings for addition and subtraction.

II. Language Arts

A. Use boiler room terms for

1. weekly spelling

2. dictionary work

3. vocabulary building

B. Write reports/essays/stories using the vocabulary words

C. Use pictures of tools and boiler room machinery to increase vocabulary.

D. Use boiler room booklets as reading materials

E. Use labels from boiler compound and other packages used in the boiler room as reading materials.

F. Have students orally discuss their work experiences in the boiler room.

G. Have pictures of boiler room tools and machinery with questions to be answered on the backside of the picture.

H. Have students fill out various boiler room report forms and describe why they are necessary.

III. Social Studies

A. Discuss worker hierarchy of the boiler room

B. In a unit on work ethics, have students discuss their responsibilities as boiler room workers and describe why it is important for a worker to fulfill his responsibilities.

IV. Science

A. Discuss Ph and the reasons for testing the Ph of the boiler feed water.

B. Discuss scientific, technical and chemical terms associated with the boiler room.

C. Discuss the principle of energy conversion and its application to the boiler room.

D. Discuss methods of heat transfer using the boiler as an example.

E. Discuss air pollution created by burning fossil fuels and describe methods used in the boiler room to control this type of pollution.

F. Discuss the conversion of electrical, mechanical energy and cite examples found in the boiler room, i.e., solevoid valuves, electric motors, gauges.

G. Discuss the conversion from heat to electrical energy and cite examples found in the boiler room--thermo-copies, termal bridge.

H. Discuss the principle behind pumps and the different types of pumps. Cite examples found in the boiler room.

SOME CAREERS ASSOCIATED WITH THE BOILER ROOM AREA

Industrial Boiler Center

Marine Boiler Tender

Boiler Inspector - Insurance Company

Plumber

Oil Burner Repair Man

Boiler Inspector - State and Local

Mellwright

Instrument Repairer

Bench Machinest

Boiler Salesman

Welder

Boiler Tender's Assistant

Boiler Room Fireman

Locomotive Fireman

Power Station Operator

Stationary Engineer

BUILDING CUSTODIAN AREA

STUDENT_____ SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR BUILDING CUSTODIAN AREA

Please evaluate this student by placing an "X" and the number of hours in the proper column.

SKILLS	No. Of Hours	Excellent	Good	Average	Fair	Poor	Does Not Apply
1. Pick up Loose Papers							
2. Wash table and desk							
3. Wipe table and desk tops dry							
4. Washes Chairs - Wipes Dry							
5. Stacks chairs on desks							
6. Cleans blackboards							
7. Wipes and cleans windows							
8. Sweeps floors							
9. Picks up and discard floor sweepings							
10. Mops floors							
11. Waxes floors							
12. Straightens out book shelves							
13. Dusts room and walls							
14. Empties waste baskets							
15. Moves furniture to dust under it							
16. Returns furniture to original position							
17. Cleans dust mop and broom							
18. Uses mop bucket and wringer							
19. Mixes cleaning solution							
20. Cleans Lavatories							
21. Checks Lavatory Dispensers, fills when necessary							
22. Cleans and Polishes lavatory fixtures							
23. Strips floor of old finish							

STUDENT_____

SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR BUILDING CUSTODIAN AREA

SKILLS	ACHIEVEMENT						
	No. Of Hours	Excellent	Good	Average	Fair	Poor	Does not apply
24. Uses electric scrubber							
25. Uses electric buffer							
26. Uses vacuum cleaner							
27. Cleans, and stores equipment							

SOME VOCABULARY TERMS ASSOCIATED WITH THE BUILDING CUSTODIAN AREA

brush
broom
furniture
vertical
parallel
stride
handle
overlap
debris
baseboard
stationary
original
area
gouge
receptacle
vacuum
stair thread
soil
landing
lengthwise
cleaning solution
churn
wring
mop strands
chalkboard
baseboard
ledge
projection

brightware
lavatory
urinal
toilet
sealer
wax
applicator
buff
container
efficient
strip
tile
durable
fiber
flexible
stroke
motor casing
filter bag
crevice
attachment
accessible

SOME COMMON TOOLS ASSOCIATED WITH THE BUILDING CUSTODIAN AREA

LINT BRUSH

WISK BROOM

TREATED DUSTCLOTH

DUST MOP

VACUUM CLEANER

COUNTER BRUSH

DUST PAN

PUTTY KNIFE

WET MOP

MOP BUCKET

WRINGER

SPONGE

NEUTRAL CLEANER

HAND SCRUB BRUSH

BUCKET

WASTEBASKET

FLOOR SCRUBBER

SCRUBBER BRUSHES

SCRUBBER PADS

SUPPLY CART

BUFFER

WET-VAC

BROOM

UPHOLSTERY BRUSH

WALL BRUSH

FLOOR SCRUB BRUSH

TOILET BOWL BRUSH

CARPET SWEEPER

DRAPERY BRUSH

RUG BRUSH

CREVICE TOOL

SOME WAYS IN WHICH A STUDENT'S EXPLORATION ACTIVITIES IN THE BUILDING CUSTODIAN AREA CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. liquid measure for cleaning solutions and wax

B. Division and multiplication

1. compute proper amount of cleaning solution for amount of water

2. compute witholding tax from 1 week's pay

C. Percents

1. compute percentage of cleaning fluid to percentage of water

D. Measurement

1. compute amount of wax or cleaning fluid needed to clean a given area

2. compute the square foot area of a room

3. use liquid measure for mixing cleaning solution and water

II. Language Arts

A. Use Building Custodian terms for writing reports; essays; stories

B. Hold a mock interview for a job as a building custodian to emphasize familiarity with vocabulary associated with this area

C. Develop crossword puzzles using building custodian tool and vocabulary terms

D. Have students use the newspaper to read and report on job openings in the building custodian area

III. Social Studies

A. Discuss changes that have occurred in the job market for building custodians

B. Discuss the local demand for building custodians and the importance of the building custodian's job.

C. Discuss the necessity of doing a good job and keeping the immediate supervisor informed of one's work.

IV. Science

A. Discuss the job hazards associated with being a building custodian

B. Discuss the reasons for waxing a surface

C. Discuss the need for the proper grounding of electrical floor washing equipment

D. Discuss the concept of leverage and how it applies to the role of the building custodian with respect to lifting, pushing, sweeping, and using power cleaning machines.

SOME CAREERS ASSOCIATED WITH THE BUILDING CUSTODIAN AREA

Building Custodian

Carpet Installer

Window Washer

Janitor

Sexton

Commercial Office Cleaner

Porter

Bathroom Attendant

Housekeeper

Utility Man

Waste Collector

Cleanup Man

BUSINESS AND OFFICE AREA

SOME VOCABULARY TERMS ASSOCIATED WITH THE OFFICE AND CLERICAL AREA

type

file

platen

appointment

schedule

typewriter

mimeograph

letterhead

carbon

photocopy

collate

alphabetize

wire basket

stencil

copy

margin

cross-reference

numerical

abbreviation

receptionist

directory

compose

manuscript

SOME TOOLS ASSOCIATED WITH THE OFFICE AND CLERICAL AREA

typewriter

file

electric adding machine

photo-copy machine

paper cutter

stapler

white-out

spirit-duplicator fluid

telephone

dictionary

paper punches

mimeograph correction fluid

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES IN THE OFFICE AND CLERICAL AREA CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. compute wages for fractions of hours worked
2. utilize fractional parts of an hour in order to complete salary for time worked

B. Division and Multiplication

1. Compute salary for overtime, docked pay and wage deductions

C. Percents

1. Compute percentage and amount that should be taken out of one's salary for social security, pensions, medical plans, and withholding tax.
2. Computes percentage discount from list price

D. Measurement

1. Divide a $8\frac{1}{2}$" x 11" sheet into any number of equal columns for typing column data.
2. Find the center of a page
   a. by ruler
   b. by typewriter spaces

E. Miscellaneous

1. Do simple bookkeeping problems
2. Prepare purchase orders
3. Prepare billing invoices

II. Language Arts

A. Use business and office terms for:

1. building vocabulary
2. spelling quizes
3. dictionary work

B. Develop a unit using a mock office telephone conversation.

a. procedure ("Good morning", identification)

b. vocal quality

C. Have students use catalogs to write or type up complete descriptions of items to be ordered in order that the vendor understands what is being ordered.

D. Have students scan business letters to locate specific words, numbers, phrases and symbols commonly used in business correspondence.

E. Have students complete various business forms and employment applications.

F. Familiarize students with various signs that are found in business forms and stores. Include the non-verbal signs also.

G. Provide lists of words in order to develop alphabetizing skills.

H. Have students compare and write business letters.

I. Utilize reading material that is related to business and office occupations.

III. Social Studies

A. Discuss the "work ethic" and the necessity to meet one's job responsibilities in order to retain a job.

B. Discuss the role and responsibility of various office personnel.

C. Discuss the need for non-discrimination in employment practices.

D. Discuss taxes, especially as they apply to wages and business and the purpose of the taxes discussed.

E. Utilize the daily newspaper to identify available jobs in office and clerical occupations in the local geographic area. Utilize these ads to discuss employment trends in the state.

IV. Science

A. Discuss the principles of operation of the major types of office copiers.

B. Discuss the scientific principles involved in the office typewriter.

C. Identify the simple machines which make up a standard office typewriter.

D. Have students recognize safety hazards and safety rules in the office area.

SOME CAREERS RELATED TO THE OFFICE AND CLERICAL AREA

Receptionist

Telephone Operator

File Clerk

Stenographer

Secretary

Office Manager

Senior Typist

Clerk-Typist

Court Reporter

Filing Clerk

Duplicating Machine Operator

Library Assistant

Key Punch Operator

Computer Operator

Billing Clerk

Time Keeper

Currency Sorter

Tool Clerk

Delivery Person

Stock Clerk

Tool Clerk

Mail Sorter

Shipping Clerk

Office Machine Serviceman

CARPENTRY AREA

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT FOR CARPENTRY

Please evaluate this student by placing an " X " and the number of hours in the proper column.

SKILLS	NO. OF HOURS	Achievement 1 EXCELLENT	2 GOOD	3 AVERAGE	4 FAIR	5 POOR
1. Uses measurement and layout tools (overall rating)						
a. level						
b. tape or rule						
c. framing square						
d. T level square						
e. combination square						
f. try square						
g. scratch awl						
h. chalk line						
i. plumb bob						
j. compass/dividers						
2. Interprets readings from measuring tools						
3. Selects the correct saw for the task						
4. Uses saws properly						
5. Uses smoothing, planing, and shaping tools (overall rating)						
a. jack plane						
b. block plane						
c. utility knife						
d. wood chisels						
e. putty knife						
6. Selects the correct tool for the task						

STUDENT _____ 38.

SUPERVISOR _____

SKILLS	NO. OF HRS.	ACHIEVEMENT 1 EXCELLENT	2 GOOD	3 AVERAGE	4 FAIR	5 POOR
7. Uses drilling and boring tools (over all rating)						
a. hand drill						
b. push drill						
c. brace and auger bits						
d. countersink						
e. expansion bit						
8. Selects the correct tool for the task						
9. Uses fastening and disassembly tools						
a. ripping bar						
b. claw hammer						
c. adjustable wrench						
d. screw drivers						
e. nail set						
f. pliers						
g. staple guns						
10. Selects the appropriate tool for the task						
11. Maintains hand and power tools						
a. wipes tools clean after use						
b. keeps tool handles tight						
c. keeps tool edges sharp by honing, grinding, filing						
12. Operates power hand tools properly, safely						
a. saber saw						
b. portable electric drill						
c. portable sander						

STUDENT _____

SUPERVISOR _____

39.

SKILLS	NO. OF HOURS	ACHIEVEMENT 1 EXCELLENT	2 GOOD	3 AVERAGE	4 FAIR	5 POOR	DOES NOT APPLY
13. Selects and uses appropriate fasteners							
a. common nails							
b. box nails							
c. casing nails							
d. finish nails							
e. round head screw							
f. oval head screw							
g. flat head screw							
h. lag screw							
i. plastic and metal anchors							
14. Installs sill plates							
15. Installs floor joists							
16. Attaches subflooring							
17. Frames outside wall corner							
18. Assembles a wall section							
19. Erects a wall section							
20. Frame and install partition sections							
21. Apply wall sheathing							
a. plywood							
b. sheetrock							
c. fiberboard							
d. wood boards							

STUDENT _____ 40.

SUPERVISOR _____

SKILLS	NO. OF HOURS	ACHIEVEMENT 1 EXCELLENT	2 GOOD	3 AVERAGE	4 FAIR	5 POOR
22. Install asphalt roofing materials						
23. Sets windows						
24. Installs door frames						
25. Installs and repairs gutter systems						
26. Replaces broken window glass						
27. Build and repair screen doors and windows						
28. Interprets information from blue prints						
29. Cleans up his work area						

SOME VOCABULARY TERMS ASSOCIATED WITH THE CARPENTRY AREA

abrasive
acute angle
alignment
arc
assembling
bevel
blueprint
board foot
bonding agent
boring
brad
casein glue
clinching
concave
construction
convex
corrugated
cubic inch
dado
diagional
diameter
dimension
dowel
emery cloth
enamel
extension
external
ferrule
finish
flute
framing
grain
hardwoods
hasp
hexagon
hone
intersect
irregular
kerf
laminate
linseed oil
meter
mortise
nibs
oval
plywood
protractor
pumice
rabbet
radius
resin
right angle
rough
sawhorse
scale
seasoned lumber
square
standard
surface
template
tenon
toenailing
tongue
trammel
trestle
turpentine
varnish
vertical
whet
phillips head
anchor

SOME COMMON TOOLS USED BY THE CARPENTRY AREA

folding rule
rule
framing square
try-square
combination square
compass
dividers
level
calopers
hand saws (rip and cross cut)
back saw
hack saw
coping saw
keyhole saw
black plane 6"
jack plane
spokeshave
utility knife
chisels
files
auger bits
counter sink
carpenters brace
chalk line
scratch awl
putty knife
sanding block
expansion bit
bar clamps
"C" clamps
web clamps
bench vises
machinist vise
pliers
adjustable wrench
screw drivers
drill
wrench
ripping bar
claw hammer
nail set
electric drill
push drill
saber saw
sander
hand circular saw
staple gun
band saw
lathe
scroll saw
jointer

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES IN CARPENTRY CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. Lumber size
2. Nail lengths
3. Drill and bit sizes

B. Division and Multiplication

1. Computing the amount of board feet to order.
2. Computing the number of plywood panels to order.
3. Computing wages for hours worked.
4. Compute the cost of materials for a given job.

C. Decimals

1. Use decimal equivalent chart to select correct drill size.
2. Use pilot drill size chart to select the correct pilot drill size for a given size wood screw.

D. Measurement

1. Measurement of common piece of lumber.
2. Compare "Nominal Size" to measured size.
3. Measure square footage of a building or room.
4. Measure depth to drill pilot hole.
5. Measure angle to cut roof rafter.

II. Language Arts

A. Use carpentry terms for:

1. Spelling quizes
2. Dictionary work
3. Vocabulary building

B. Write reports/essays/stories using carpentry terms and based on carpentry experiences.

C. Use pictures of carpentry tools and descriptions written at the 4th grade level to increase vocabulary.

D. Use booklets on various carpentry tools which are available from Stanley Company and other tool manufacturers as reading materials.

E. Have students make oral presentations to describe an experience in the Carpentry Area.

F. Have students fill out a bill of materials for a given job. The bill of materials can then be used in the math class to compute the total cost of the materials specified in the bill of materials.

III. Socal Studies

A. Discuss the carpenter's apprenticeship program.

B. Discuss careers related to carpentry.

C. Discuss the pros and cons of labor unions.

IV. Science

A. Have students describe the simple machine (s) that comprise selected carpentry tools.

B. Discuss and compare the holding power of various types of carpentry glue.

C. Discuss wood types, tree growth, and sources of lumber.

D. Compare the principles of good construction versus bad construction principles.

E. Discuss solar energy and how it should affect the construction of a home.

SOME CAREERS ASSOCIATED WITH THE CARPENTRY AREA

Rough Carpenter

Finish Carpenter

Pattern Maker

Concrete Form Builder

Cabinet Maker

Flooring Layer

Packing and Crating Builder

Marine Carpenter

Model Maker

Boat Builder

Lumber Yard Worker

Furniture Worker

Floor Finisher

Woodwork Inspector

Woodwork Finisher

Picture Framer

Hardware Store Salesman

Construction Materials Estimator

Lumber Salesman

Millwork Foreman

ELECTRICAL AREA

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR ELECTRICAL AREA

Please evaluate this student by placing an " X " and the number of hours in the proper column.

SKILLS	NO. OF HOURS	Achievement 5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
1. Uses basic electrician's tools							
a. folding rule							
b. steel tape							
c. hacksaw							
d. level							
e. wirecutter/stripper							
f. electrician's knife							
g. linesman's pliers							
h. keyhole saw							
i. needle nose pliers							
j. portable electric drill							
k. screw drivers							
l. adjustable wrench							
m. taps							
n. EMT and conduit benders							
o. snake							
p. test light							
q. voltmeter (Wiggins)							
r. ammeter - amprobe							
s. polarity tester							

2.

STUDENT _____ SUPERVISOR _____

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BASIC SKILLS/ACHIEVEMENT FOR ELECTRICIAL AREA

SKILLS	NO. OF HOURS	5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
2. Measures amount of wire for job							
3. Cuts wire properly							
4. Interprets information on wire sheath or box							
5. Installs single pole switches							
6. Installs three-way switches							
7. Installs duplex receptacles							
8. Differentiates between the following wire types							
a. Romex							
b. B X							
c. oil and gasoline resistant							
d. high temperature							
9. Installs EMT and/or conduit							
10. Identifieds the following EMT or conduit hardware							
a. couplings							
b. connectors							
c. bushings							
d. TEE							
e. L B							
f. L L							
g. L R							
h. surface mounted box							
i. conduit or EMT strap							
11. Identifies and describes the use of the following electrical hardware							
a. B X connector							
b. Romex connector							

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT FOR ELECTRICIAL AREA 48.

SKILLS	NO. OF HOURS	5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
c. fiber bushing							
d. grounding wire							
e. wire nut							
f. adjustable hanger							
g. octagonal box							
h. switch box							
i. shallow box							
j. deep box							
k. cartridge fuse							
l. circuit breaker							
m. plug fuse							
n. wall plate							
o. service panelboard							
p. toggle bolts							
q. screw anchor							
r. fluorescent lights							
12. Reads a work order							
13. Cleans up work area at end of day							

VOCABULARY TERMS ASSOCIATED WITH THE ELECTRICIAL AREA

romex
armoured cable
bushing
tee
coupling
connector
three-way switch
single-pole switch
duplex receptacle
American wire gauge
electrical metallic tubing
conduit
surface mounted box
conduit strap
ground
wire nut
octagonal box
switch box
cartridge fuse
circuit breaker
pigtail
wall plate
fluorescent light
code book
knock out
nonmetallic sheathed cable
adapter
toggle bolt
service panel
screw anchor

alternating current
armature
back-wired receptacle
cable
ceiling fixture
circular mil
conductor
solderless connectors
splice
direct current
distribution panel
entrance panel
fish tape
fixture stud
fustat
gang box
insulator
junction box
meter
National Electrical Code
neutral wire
hot wire
outlet
permit
pipe reamer
potential
raceway
relay
rotor
solder

split circuit

split receptacle

stator

stranded wire

surface wiring

mercury switch

toggle switch

twist - lock plug

underwriters' laboratory

Type UF Cable

Type TW Wire

underwriters' knut

voltage

amperage

resistance

wattage

SOME COMMON TOOLS USED BY THE ELECTRICIAN

folding rule

steel tape

hacksaw

electrician's knife

wirecutter/stripper

linesman's pliers

needle nose pliers

keyhole saw

visegrips

adjustable wrench

Allen wrench

channel-lock pliers

drills

screwdriver - flat blade

screw driver - Phillips

claw hammer

chassis punches

conduit and EMT benders

snakes

test light

volt meter (wiggins)

ammeter (amprobe)

polarity tester

fuse pullers

taps and dies

level

portable electric drill

I. Mathematics

A. Fractions

1. EMT and conduit sizes
2. Tap and die sizes
3. drill sizes
4. wrench sizes

B. Division and Multiplication

1. Compute amount of wire, tubing, or amount of supplies needed.
2. Compute cost of fringe benefits received.
3. Compute the number of lights needed to provide the required watts per square foot for a given area.

C. Decimals

1. Use chill sizes to show a practical use of decimals. Convert drill sizes in fractions to decimals and visa versa.

D. Percents

1. Calculate percent load for a given wire size when given appliances are "on line."

E. Measurement

1. Time - compute time required to do a given job
2. Wire Gauge - compare different commonly used wire sizes
3. Pressure - compute voltage drop for a given size and length of run of wire
4. Amperage - compute the current flow for a given voltage and resistance
5. Resistance - compute the resistance of a given circuit
6. Wattage - cumpute the wattage for a given appliance or the maximum amount of watts for a given wire size
7. Meters - have student read and interpret scales of volt meters, ammeters, wattmeters, ohmmeters, and multimeters.

II. Language Arts

A. Use common electrical terms for
   1. weekly spelling
   2. dictionary work
   3. vocabulary building

B. Write reports/essays/stories using vocabulary words related to the electrician's assistant program

C. Use pictures of common electrician's tools and materials on 5 x 8 cards with questions to be answered--written on the backside of the card.

D. Use labels from electrical supply packages as reading materials

E. Have students orally describe their experiences as an electrician's assistant to the class.

F. Have students write an order for materials for a specific job. Electrical supply catalogs should be used in this process.

G. Have students read then describe orally the procedure for installing a given electrical device.

III. Social Studies

A. Discuss unions and the reason for the development of unions.

B. Discuss the grievance procedure that a union electrician should follow.

C. Discuss apprenticeship programs--their requirements and their purpose.

IV. Science

A. Discuss ohms law and illustrate its application.

B. Discuss simple machines and how common electrical tools make use of the simple machines.

C. Discuss the reason for equipment grounding

D. Discuss ground fault interruptors

5. Construct simple series and parallel circuits

SOME CAREERS ASSOCIATED WITH THE ELECTRICAL AREA

Construction Electrician

Maintinance Electrician

Electrician's Helper

Telephone Service Man

Electric Company Lineman

Appliance Service Man

Electromechanical Technician

Partsman - electrical equipment supply house or hardware store

FOOD SERVICE AREA

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR THE FOOD SERVICE AREA

Please evaluate this student by placing an "X" and the number of hours in the proper column	ACHIEVEMENT					
S K I L L S - CHEF'S ASSISTANT	No. of Hours	Excellent	Good	Average	Fair	Poor
1. Observes sanitary precautions applicable to food service work (Overall)						
a. Practices good personal hygiene						
b. Washes hands after use of restroom						
c. Wears clean apron						
d. Wears clean clothing						
e. Does not handle food when he has open cuts/sores						
2. Observes safety precautions applicable to food service work (Overall)						
a. Receiving and storing food						
b. Food preparation						
c. Drawers and doors						
d. Machine operation						
e. Knives and other utensils						
f. Dishes and glassware						
3. Prepares simple salads (Overall)						
a. Fruit						
b. Vegetable						
c. Meat						
4. Prepares simple foods (Overall)						
a. Sandwiches						
b. Desserts						
c. Soups						

JENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENTS RECORD FOR THE FOOD SERVICE AREA

SKILLS - CHEF'S ASSISTANT	No. of Hours	Excellent	Good	Average	Fair	Poor
d. Appetizers						
e. Vegetables						
5. Operates and cleans meal preparation equipment (Overall)						
a. slicing machine						
b. grinder						
c. oven						
d. steamer						
e. mixer						
f. fryolator						
g. coffee machine						
h. toaster						
i. grill						
j. reach-in refrigerator						
l. pass-through warmer						
6. Clean meal preparation area						
7. Works the serving line (Overall)						
a. cleans counter and steam table						
b. serves food						
c. replenishes food and beverages						
8. Inventories supplies (Overall)						
a. stocks shelves						
b. orders stock						
c. stores perishable supplies						
d. rotates stock						

...PERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR THE FOOD SERVICE AREA

S K I L L S - KITCHEN MAINTENER	No. of Hours	Excellent	Good	Average	Fair	Poor
1. Operates and Maintains kitchen equipment						
a. dishwasher						
b. walk-in cooler						
c. walk-in freezer						
d. reach-in refrigerator						
e. pass-through refrigerator						
f. pass-through warmer						
g. food carts						
h. lowerators						
i. push carts						
j. elevator						
2. Maintains floors						
a. sweeps						
b. mops						
c. washes						
d. buffs						
e. vacuums						
3. Maintains tables						
a. removes utensils, dishes and glasses						
b. scrapes and stacks dishes						
c. washes tables						
d. fills salt and pepper shakers						
e. arranges chairs and tables						
4. Washes pots and pans						
5. Stores pots and pans after drying						

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STUDENT _____

SUPERVISOR _____ 60.

BASIC SKILLS/ACHIEVEMENT RECORD FOR THE FOOD SERVICE AREA

S K I L L S - KITCHEN MAINTENER	No. of Hours	Excellent	Good	Average	Fair	Poor
6. Operates automatic dishwasher						
a. loads dishwasher						
b. empties dishwasher and cleans						
c. stacks dishes						
d. puts utensils in proper place						
7. Observes sanitary precautions applicable to food service work						
a. personal grooming						
b. appropriate clothing						
c. washes hands before handling clean dishes, pots, pans, etc.						
8. Observes safety precautions applicable to food service work						
a. uses signs or other means to warn of wet floor						
b. keeps floor dry						
c. handles utensils, glassware and machines with care						
d. does not overflow scrap containers						
e. wears proper clothing						
f. lifts heavy objects properly						

SOME TOOLS ASSOCIATED WITH THE FOOD SERVICE AREA

thermometer
measuring cup
whisk
vegetable parer
meat grinder
scoops
kitchen shears
pastry brush
strainers
garlic press
mallet
spatula
ladle
tongs
oven rack
knives
sauce pans
bowls
cooking spoons
colander
funnel
grater
bulb baster
potato masher
toaster
electric mixer
skillets
deep fat fryer
nutcracker
spoons
forks
knives
bake pans
sheet pans
braziers
stock pots
cleavers
saute pans
skillet
double boiler
roasting pan
sieves
skimmer
food tongs
vegetable brush
pot hook
block scraper
grinder
slicing machine
oven
steamer
mixer
steam table
fryolator
coffee urn
toaster
grill
reach-in refrigerator
pass-though refrigerator
pass-through warmer
dishwasher
walk-in cooler
walk-in freezer
food carts
lowerators
push carts
mop
buffer

SOME VOCABULARY TERMS ASSOCIATED WITH THE FOOD SERVICE AREA

chowder
buffet
sandwich
a la mode
a la carte
beverage
menu
condiment
sauteed
ingredients
sanitary
utensils
detergent
cleansers
consistency
whipped
fruited
grilled
open-faced
club sandwich
finger sandwich
technique
napkin
teaspoon
tablespoon
grate
shred
pare
julienne
cube
sliver
snip
mince
blend
whip
simmer
baste
dumpling
baking powder
appetizer
calorie
casserole
rotisserie
stewed
chow mein
yeast
confectioner's sugar
croquettes
crouton
curried
deviled
omlet
poached
batter
clarify
hollandaise
hors d'oevures
gourmet
substitute
brunch
oregano
parfait
parmesan
pickled
rhubarb
romaine
roquefort
season
soufflè
zucchini
knead
barbecue
bisque
blanch
coddle
dilute
dissolve
filet
flake
legumes
marinate
narrow
serrate
singe
steep
stir-fry
au jus

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES IN THE KITCHEN AREA CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. Utilize fractions in:

measurement, e.g. 1/3 tablespoon, 1/2 ounce

time, e.g. 1/4 hour

money, e.g. 1/2 dollar

2. Provide students with problems in which they have to utilize dry and liquid measurement for quantity and weight.

3. Have students convert currency into fractional components

4. Utilize problems of telling time and interpreting baking time requirements from a cookbook.

B. Percent

1. Have students complete percentage of various ingredients in a given recipe

2. Have students calculate percent saved through examples of comparative buying of grocery store products

C. Division

1. Have students use conversion formula to determine quantities of ingredients necessary when expanding or reducing a recipe to feed a larger or smaller number of people

D. Miscellaneous

1. Utilize containers, i.e. measuring cups, and standard sizes of cans and jars commonly found in the kitchen to expose the student to mass and volume concepts

2. Have students compute tax and the waiter's tip for a restaurant bill

II. Language Arts

A. Utilize the labels from food cans and jars to develop reading, reading comprehension, vocabulary and spelling skills

B. Develop a list of vocabulary terms associated with the kitchen and food service trades. Use this list to develop compositions or in student oral reports

C. Utilize cook books to develop a student's comprehension of the sequence to follow of a recipe

D. Use pictures of kitchen utensils to promote vocabulary development and pronunciation

A. Discuss the various forms involved in applying for a job. Such forms as the birth certificate, social security card, job application, letters of application, driver's license, etc. should be discussed.

B. The application procedure for a social security card and social security benefits should be discussed.

C. Have students use the help wanted section of the newspaper to identify various jobs associated with the kitchen trades. The educational requirements of these jobs can then be investigated.

D. Compare restaurant cooking, institutional cooking and hospital cooking.

IV. Science

A. Discuss the principle of heat transfer as it applies to cooking

B. Discuss the transmittal of bacteria and disease in the food service trades and the role of good hygiene in the prevention of these problems.

C. Discuss state sanitation and health laws related to the food service industry.

D. Discuss the types of common chemical food additives and their role.

E. Discuss nutritional value of common foods.

F. Discuss "balanced diets"

G. Discuss food poisoning, its causes and prevention

1. Salmonella infection

2. Staphylococcus food poisoning

3. Botulism

4. Trichinosis

H. Discuss proper food storage procedures

SOME CAREERS RELATED TO THE FOOD SERVICE AREA

Food Service Manager
Chef
Executive Chef
Sous-Chef
Chef Steward
Working Chef
Chef de Partie
Night Chef
Banquet Chef
Second Cook
Soup Cook
Broiler Cook
Fry Cook
Vegetable Cook
Cook's Assistant
Swing Cook
Garde Manager
Pastry Chef
Assistant Pastry Chef
Baker
Baker's Assistant
Butcher
Oyster Man
Dietary Aide
Short Order Cook
Salad Man
Pantry Man
Steam Table Attendant
Vending Machine Stocker
Counter Service Worker
Maitrè D'Hotel
Waiter
Waitress
Busboy
Car Hop
Kitchen Maintainer
Dishwasher
Pot and Pan Man

GREENHOUSE AREA

STUDENT_____ SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT FOR GREENHOUSE

Please evaluate this student by placing an " X " and the number of hours in the proper column.

SKILLS	NO. OF HOURS	Achievement 5 EXCELLENT	4 GOOD	3 AVERAGE	2 FAIR	1 POOR	DOES NOT APPLY
Makes soil for planting							
Sterilizes soil							
Sterilizes beds							
Screens top soil							
Describes the stages of the plant growth cycle							
Plants seedlings							
Fertilizes plants							
Produces cuttings to start plants							
Hand pollinates plants							
Transplants plants							
Cleans pots							
Produces peat pots							
Sprays plants against insects							
Weeds garden beds							
Prunes plants							
Pots plants							
Cuts flowers							
Irrigates plants							
Uses tools properly							

SOME VOCABULARY TERMS ASSOCIATED WITH THE GREENHOUSE

rizomes
annuals
biennials
bulbs
compost heap
corms
crocus
cuttings
fertilizer
geotropism
hydrotropism
geranium
gladioli
hyacinths
narcissus
osmosis
perennials
photosynthesis
phototropism
sowing
repotting
transpiration
waterweed
ophids
spider mites
white flies
scale
mealybugs
slugs
ants
roots
algae
atomizer
bacteria
carbon dioxide
oxygen
cellulose
chlorophyll
chromosomes
conifers
dextrose
cytoplasm
evergreens
ferns
sepals
stigma
pistil
stamens
heiotrope
hormones
horticulture
humidity
moss
nuceoli
seeds
tubers
pruning
tap
stems
weed

SOME TOOLS COMMONLY USED IN THE GREENHOUSE

hand rake

hand spade

watering can

pressurized sprayer

garden rake

leaf rake

hoe

shovel

perk

carts

plows

clippers

edgers

trimmers

pruners

rollers

spreaders

mowers

pitchfork

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES IN THE GREENHOUSE CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. liquid measure for plant watering and fertilizer mixtures.

2. compute using fractions, the amount of chemicals to mix for fertilizing a given size garden area or shrub.

B. Division and Multiplication

1. Compute amount of fertilizer to use for a given area

2. Compute cubic feet of soil needed to fill a given size greenhouse flower bed.

C. Decimals

1. Convert percentages and fractions used in the greenhouse to their decimal equivalents.

E. Percents

1. use labels from fertilizer containers which list percentages of ingredients to discuss percents

2. compute the proper percentage of peat moss, vermiculite, and other ingredients for making soil to use in the greenhouse.

F. Measurement

1. Time - compute salary based upon hours worked and wage paid.

2. Temperature - use greenhouse and soil temperature readings to convert from celsus to farenheit.

3. Liquid - use measurement quantities common to the greenhouse and give problems utilizing greenhouse terms.

4. Area - compute the number of flowers that can be planted per square foot of greenhouse bed.

5. Area - compute the area of a given size greenhouse bed or of the greenhouse itself.

6. Proportion - compute proportion of fertilizer required for a given amount of water

7. Pressure - use steam line pressure gauge readings for addition and subtraction.

II. LANGUAGE ARTS

A. Use greenhouse terms for:

1. weekly spelling

2. dictionary work

3. vocabulary building

B. Write reports/essays/stories using greenhouse vocabulary words.

C. Use pictures of tools and greenhouse plants to increase vocabulary skills.

D. Use greenhouse booklets provided by equipment and fertilizer manufacturers as reading materials.

E. Use labels from seed packets, fertilizer bags, and other packages used in the greenhouse as reading materials.

F. Have students orally describe their work experiences in the greenhouse.

G. Utilize pictures of greenhouse implements and plants mounted on 5 x 8 cards with questions to be answered written on the backside of the pictures.

H. Have students use catalogs from commerical suppliers to practice making an order for greehouse supplies.

III. SOCIAL STUDIES

A. Discuss the role of the greenhouse in the production of flowers and edible food products.

B. Identify areas in Connecticut in which the greenhouse industry is a large part of that area's economy.

IV. SCIENCE

A. Discuss ph and the reasons for discussing the ph of the soil.

B. Discuss scientific, technical and chemical terms associated with the greenhouse.

C. Discuss the principles of heat transfer and heat entrapment and how they apply to the greenhouse.

D. Discuss photosynthesis and how it affects the lives of living organisms.

E. Develop simple science experiments to describe osmosis, transpiration, photosynthesis, geotropism, hydrotropism, and phototropism.

See Wickers and Tuey, 1972 for examples.

SOME CAREERS ASSOCIATED WITH THE GREENHOUSE AREA

Florist

Floriculture Worker

Landscaper

Groundskeeper

Nursery Laborer

Ornamental Horticulture Worker

Nursery Worker

Forest Ranger

Greenhouse Employee

Garden Center Employee

Golf Course Employee

Town, City, State or National Park Employee

Orchardist

Tree Surgeon

Bedder

Garden Chemicals Salesman

Plant Breeder

Teacher

Greenhouse Manager

Fist Control Specialist

GROUNDS MAINTENANCE AREA

STUDENT_____ SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR GROUNDS MAINTENANCE AREA

Please evaluate this student by placing an "X" and the number of hours in the proper column

SKILLS	ACHIEVEMENT						
	No. of Hours	Excellent	Good	Average	Fair	Poor	Does not apply
1. Applies Lime and Fertilizer according to soil test results							
2. Uses safety precautions in applying lime and fertilizer							
3. Uses tools properly							
4. Identifies sources of information for insect and disease control							
5. Applies disease and insect control products as directed							
6. Identifies common lawn problems							
7. Renovates small patches of lawn							
8. Clears lawn of debris							
9. Rakes Lawn							
10. Disposes of debris, dead grass and leaves properly							
11. Operates lawn mowing equipment							
12. Prunes trees and shrubs							
13. Treats bark wounds							
14. Corrects lawn depressions							
15. Transplants trees and shrubs							
16. Mows lawns							
17. Removes snow							

SOME TOOLS ASSOCIATED WITH THE GROUNDS MAINTENANCE AREA

wheel barrow

crowbar

funnel

treated burlap

work gloves

nursery spade

hoe

watering can

pruning shear

rake

rounded shovel

pounding stick

sod cutter

guy lime

metal pegs

tarpaulin

garden hose

hand clippers

brush

paint pot

wound dressing

power rotary mower

push reel mower

power reel mower

lawn roller

roto tiller

hand cultivator

SOME VOCABULARY TERMS USED IN THE GROUNDS MAINTENANCE AREA

backfill
orient
tamp
taut
safety standard
broadcast
mixture
feeding area
PH factor
transplant
feeding roots
symptoms
bud scale scar
analyze
watering dam
drainage
lime
peat
three-way guy
stake
guy
sealing compound
elliptical
heavy bleeder
bud
fork
wilt
internal
renovate
depression
compaction
horticulturalist
topsoil
subsoil
score
prescribe
poisonous
propogation
urea
Nitrate of Soda
Ammonium Sulfate
Calcium Nitrate
Ammonium Nitrate
Potassium Nitrate
Super Phospate
Potassium Sulfate
Bone Meal
Tankage
vermiculite

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATIVE ACTIVITIES IN THE GROUNDS MAINTENANCE AREA CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematic

A. Fractions

1. Liquid measure for mixing liquid fertilizer

2. Compute the amount of fertilizer to utilize for a given area to be covered

B. Division and multiplication

1. Compute square footage for a given area of property in order to determine the proper amount of fertilizer required.
2. Compute how much fertilizer to purchase for a given square foot area based upon the coverage per bag of fertilizer

C. Decimals

1. Convert percentages and fractions used in the grounds maintenance area to their decimal equivalents.

D. Percents

1. Use labels from fertilizer bags and jars to determine percentages of ingredients. Use this discussion to compare the relative amount of each ingredient.

E. Measurement

1. Time - compute salary based upon hours worked and wage paid

2. Temperature - use outdoor air and soil temperature readings to convert from farenheit to Celsus

3. Liquid - use measurement quantities common to the grounds maintenance area and give problems utilizing terms associated with grounds maintenance.

4. Compute amount of oil in ounces that should be mixed with a given amount of gasoline for a given fuel mix ratio.

5. Area - determine the amount of grass seed needed to seed a given area of land or the amount of loom needed, in cubic yards to fill a given area.

II. Language Arts.

A. Use grounds maintenance terms for

1. Dictionary work

2. Weekly spelling quizes

3. Vocabulary development

4. Composition writing

C. Utilize the local newspaper or grounds maintenance trade journals to identify careers related to grounds maintenance.

D. Write reports about what is done in the grounds maintenance area

E. Use booklets provided by grounds maintenance equipment and fertilizer manufacturers as reading materials

E. Have students interview grounds maintenance workers

F. Utilize pictures of grounds maintenance equipment and common shrubs to increase vocabulary and spelling skills

III. Social Studies

A. Have students use the newspapers help wanted section to determine the need for grounds maintenance workers in this area

B. Discuss the role of the grounds maintenance and his/her contribution to the aesthetic quality of the community

C. Discuss grounds keeping as a leisure time activity

IV. Science

A. Discuss PH and the reasons for maintaining the PH of the soil at a given level

B. Discuss scientific, technical and chemical terms associated with grounds maintenance

C. Discuss photosynthesis and how it affects living organisms

D. Discuss ecology and pollution and the effect that proper grounds maintenance procedures have on each.

SOME CAREERS ASSOCIATED WITH THE GROUNDS MAINTENANCE AREA

Nursery Laborer

Groundskeeper

Forest Ranger

Ornamental Horticulture Worker

Nursery Worker

Florist

Floriculture Worker

Landscaper

Greenhouse Employee

Garden Center Employee

Gold Course Employee

Town, City, State of National Park Employee

Orchardist

Tree Surgeon

Pruner

Landscape Gardner

Farm Chemicals Salesman

Landscape Architect

Grounds Maintenance Manager

Pest Control Specialist

HOME MECHANICS CLASS COMPETENCIES

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR HOME MECHANICS

Please evaluate this student by placing an "X" and the number of hours in the proper column.

SKILLS	No. of Hours	ACHIEVEMENT 1 Excellent	2 Good	3 Average	4 Fair	5 Poor	Does not apply
I. Carpentry							
1. Cut, fit and lay linoleum tiles							
2. Replace glass in windows							
3. Replace window sash cords							
4. Repair loose or binding windows							
5. Make, repair, store window screens							
6. Repair binding or sagging doors (outside and inside)							
7. Repair or replace window and door locks							
8. Caulk windows and doors							
9. Make minor furniture repairs:							
a. fix loose joints							
b. repair scratches							
c. level unstable furniture							
d. repair defective veneer							
e. polish furniture							
10. Repair creaking, sagging, cracking or warping floors and stairs							
11. Repair damaged counter tops and install new counter tops							

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR HOME MECHANICS

Continued.....

Evaluate this student by placing an "X" and the number of hours in the proper column

SKILLS	ACHIEVEMENT						
	No. of Hours	1 Excellent	2 Good	3 Average	4 Fair	5 Poor	Does not apply
II. Plumbing							
1. To repair the following:							
a. clogged traps and drains							
b. leaking pipes							
c. joints							
d. faucets and toilets							
e. leaky gas joints							
f. broken or ruptured pipes							
g. leaky fixtures							
h. thaw frozen pipes							
2. Correctly light gas furnaces, stoves and hot water heaters							
3. Properly insulate pipes							
4. Drain all water and gas systems prior to repair and fill them afterwards							
5. Read a residential gas meter							

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR HOME MECHANICS

Continued.....

Evaluate this student by placing an "X" and the number of hours in the proper column

SKILLS	ACHIEVEMENT						
	No. of Hours	1 Excellent	2 Good	3 Average	4 Fair	5 Poor	Does not apply
III. Electrical							
1. Locate, recognize and replace household fuses and circuit breakers							
2. Determine problem that caused fuse to blow							
3. Replace, repair or install wall switches, receptacles and light fixtures							
4. Make, repair and use extension cords							
5. Diagnose and make simple repairs to lamps, appliance cords and appliances							
6. Splice and tape various types of wire							
7. Identify the current needs of various electrical appliances							
8. Check equipment grounding							
9. Identify and use basic electrician's tools							
10. Read a residential electric meter							
11. Troubleshoot and repair irons, toasters, mixers, fans and drills							

STUDENT _____ SUPERVISOR _____

BASIC SKILLS/ACHIEVEMENT RECORD FOR HOME MECHANICS

Continued.....

Evaluate this student by placing an "X" and the number of hours in the proper column

SKILLS	ACHIEVEMENT						
	No. of Hours	1 Excellent	2 Good	3 Average	4 Fair	5 Poor	Does not apply
IV. Masonry							
1. Prepare forms and mix concrete for use in the repair and construction of sidewalks, porches, cellars							
2. Lay brick and blocks as used in simple home repair jobs							
3. Mix mortar for laying bricks and blocks							
4. Patch hairline and larger holes in plaster walls and sheetrock							
5. Install sheetrock and cover seams by the use of tape and joint compound							
6. Use various methods of fastening objects to plaster, plasterboard, brick and block walls.							

PAINTING AREA

STUDENT_____ SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR PAINTING AREA

Please evaluate this student by placing an "X" and the number of hours in the proper column.

SKILLS	ACHIEVEMENT					
	No. of Hours	Excellent	Good	Average	Fair	Poor
I. Uses painting tools property and safely (overall)						
a. round sash brush						
b. angled sash brush						
c. wall brush						
d. trim brush						
e. varnish brush						
f. roller applicators						
g. paint can openers						
h. roller tray						
i. ladder						
j. scrapers						
k. abrasives						
l. pail						
m. caulking gun						
n. wire brush						
o. pail hook						
p. sanding block						
2. Uses hand and power tools properly (overall)						
a. screwdriver						
b. putty knife						
c. hammer						
d. drum sander						
e. edger machine						
f. pliers						

STUDENT_____

SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR PAINTING AREA

ACHIEVEMENT

85.

SKILLS	No. of Hours	Excellent	Good	Average	Fair	Poor
3. Prepares surface to be painted (overall)						
a. scrapes						
b. sands						
c. fills cracks and voids						
d. washes						
e. primes metal surfaces						
4. Spreads drop cloths, covers furniture						
5. Sets up ladders and planks safely						
6. Has wipe-up rags, brushes and other tools ready for the job to be done						
7. Selects proper paint (overall)						
a. color						
b. type						
c. amount						
8. Mixes paint thoroughly						
9. Cleans brushes and rollers properly						
10. Stores paint cans and rags properly						

SOME VOCABULARY TERMS ASSOCIATED WITH THE PAINTING AREA

latex
bristle
stain
exterior
interior
roller
prime
overhang
scaffolding
drop cloth
gable
downspout
ornamental iron
shutters
sash
clapboard
shingles
shakes
rough lumber
concrete
asbestos shingle
brick
stucco
flashing
gloss
semi-gloss
oil base
enamel
wallboard
plaster
ceiling
tapered bristle
flagged bristle
sag
run
holiday
orange-peeling
alligatoring
flaking
chalking
checking
peeling
mildew
blistering
resin bleeding
scaling
sill
apron
fixture
receptacle
decor
polyurethane
hinge
linseed oil
precondition
wood filler
pigment
alkyd
applicator
shellac
varnish
right angle
horizontal
vertical
rust
trim
zinc chromate
red lead
catalytic coating
primary
secondary
tertiary
step
extension
oil-base
water-base
caulking

SOME TOOLS ASSOCIATED WITH THE PAINTING AREA

painting tape

drop cloth

round sash brush

angled sash brush

wall brush

trim brush

varnish brush

roller applicator

roller tray

paint can openers

ladders

scrapers

sandpaper

emery cloth

pail

caulking gun

putty knife

wire brush

pail hook

sanding block

spray gun

aerosol spray can

sanders

screwdriver

hammer

pliers

ceiling edger

crowbar

wood filler

folding rule

SOME WAYS IN WHICH A STUDENT'S OCCUPATIONAL EXPLORATION ACTIVITIES IN THE PAINTING AREA CAN BE EXTENDED INTO THE ACADEMIC CLASSROOM

I. Mathematics

A. Fractions

1. liquid measure for paints and solvents

2. compute, using fractions, the amount of thinner to use to thin out paint to be used in a spray gun

B. Division and Multiplication

1. compute the square footage of the area to be painted

2. using the information on the paint can, estimate how much paint will be needed to be purchased to do the job

C. Percents

1. utilize labels from paint cans to determine the percentage of the different components of the paint in the can

2. compute how much thinner is used to thin a given quantity of laquer 150%

D. Measurement

1. have students use folding rules or tape measures to measure window sills and other areas to be painted

2. discuss paint brush widths

3. time - compute the time required to complete a given painting job.

II. Language Arts

A. Use common painter's terms for:

1. dictionary work

2. weekly spelling quizzes

3. report writing

4. vocabulary development

B. Have students orally describe the step-by-step procedure for painting a room

C. Use labels from paint cans and other painter's materials as reading materials

D. Use brochures from paint manufacturers about identifying paint problems, etc. as reading materials

E. Use pictures of common painter's tools and materials for vocabulary and spelling improvement

F. Write reports/stories/essays using terms associated with the painter's assistant area

III. Social Studies

A. Discuss unions, the reason for the development of the union, and the impact of unions on the American economy.

B. Discuss the grievance procedure that a union painter should follow.

C. Discuss the pros and cons of unions.

D. Discuss the employment needs in painting related occupations in the state of Connecticut through the use of the help wanted section of local newspapers.

IV. Science

A. Discuss fire safety in relation to painting.

B. Discuss the various ingredients in a can of paint and their purpose.

C. Discuss electrostatic spray painting.

D. Discuss balance and leverage in relation to using ladders and scaffolding.

SOME CAREERS ASSOCIATED WITH THE PAINTING AREA

Commercial Painter

Interior Decorator

Sign Painter

Paint Store Salesperson

Chemist

Paint Product Deliveryman

Painter's Assistant

Painter's of Manufactured products

Paperhangers

Sheet Rock Installer

Automotive Painter

Marine Painter

PLUMBING AREA

STUDENT_____ SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR PLUMBING AREA

Please evaluate this student by placing an "X" and the number of hours in the proper column.

SKILLS	ACHIEVEMENT						
	No. of Hours	Excellent	Good	Average	Fair	Poor	Does not apply
1. Uses common plumber's tools (overall rating)							
a. stilson wrench							
b. chain wrench							
c. speed wrench							
d. adjustable wrench							
e. monkey wrench							
f. presto-lite torch or propane torch							
g. pipe reamer							
h. pipe cutter							
i. pipe threader							
j. pipe vise							
k. steel tape rule							
l. folding rule							
m. hack saw							
n. hand die							
o. flaring tool							
p. swaging tool							
q. basin wrench							
r. level							
s. shovel							
t. drill							
2. Demonstrates basic plumbing procedures for threaded pipe work (overall rating)							

STUDENT_____

SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR PLUMBING AREA

SKILLS	ACHIEVEMENT						
	No. of Hours	Excellent	Good	Average	Fair	Poor	Does not apply
a. Identifies and uses common threaded fittings							
b. Measures, marks and then cuts pipe to length							
1. uses a hacksaw							
2. uses pipe cutters							
c. Threads pipe using hand dies							
d. Reams pipe using a pipe reamer							
e. Assembles and tightens pipe using a vise and/or appropriate wrenches							
3. Demonstrates basic plumbing procedures for copper pipe work (overall rating)							
a. Identifies and uses common copper pipe fittings							
b. Measures, marks and then cuts pipe to length using pipe cutters							
c. Uses a pipe reamer to ream copper pipe							
d. Uses flaring and swaging tools							
e. Solders a joint							
4. Demonstrates basic plumbing procedure for plastic pipe work (overall rating)							
a. Identifies and uses common pipe fittings for rigid plastic pipe							
b. Identifies and uses common pipe fittings for semi-rigid plastic pipe							
c. Measures, marks and then cuts rigid and semi-rigid plastic pipe using a hacksaw							
d. Uses steel clamps to join semi-rigid pipe							
e. Uses Plastic pipe solvent to join plastic pipe and fittings							
5. Identifies fixtures to be installed							

STUDENT_____

SUPERVISOR_____

BASIC SKILLS/ACHIEVEMENT RECORD FOR PLUMBING AREA

SKILLS	ACHIEVEMENT						
	No. of Hours	Excellent	Good	Average	Fair	Poor	Does not apply
6. Determines location and position of fixtures to be installed							
7. Determines location and position of fittings to be installed							
8. Installs pipes, fittings and fixtures							
9. Measures, marks and then cuts cast iron pipe using appropriate tools							
10. Joins a vertical run of cast-iron pipe							
11. Joins a horizontal run of cast-iron pipe							
12. Cleans blocked lines							
13. Changes faucets							
14. Packs faucets							
15. Grinds faucet seats							
16. Replaces toilets							
17. Replaces toilet seals							
18. Cleans oil burners							

SOME COMMON TOOLS USED IN PLUMBING

pipe wrench
adjustable wrench
steel tape rule
folding rule
hacksaw
backsaw
crosscut saw
soapstone
C-clamp
pipe vise
pipe cutters
pipe threaders
vise
pipe reamer
ratchet wrench
hand dies
tubing cutter
flaring tool
swaging tool
acetylene tank
solder
flux
soldering torch
miter box
sand paper
screw clamp
pocket knife
round file
socket
keyhole saw
drill
joint compound
backhoe
shovel
wrecking bar
band cutters
level
plumb bob
basin wrench
pipe joint compound
jig saw
flange clamp
screwdriver
speed wrench
joint runner

SOME VOCABULARY TERMS ASSOCIATED WITH PLUMBING (G111, 1978)

pipe wrench
reducer
female threads
galvanized
black iron
coupling
pipe
jam nipple
male threads
threads per inch
tee fitting
tee
street ell
stationary pipe
collar
union
brass flange
continuous
fitting allowance
bushing
decrease
line size
hex-head
quick drop
square head
close off
plug
round
nipple

flexible
rolled
zig - zag
center-to-center
face
take-up
allowance
copper tubing
plastic tubing
teeth per inch
soapstone
burrs
cut to the line
tripod
tap
die
C-clamp
carbon steel
counterclockwise
clockwise
cutting wheel
ream
lubricant
friction
coolant
latch
yoke
jaws
ratchet

elbow
reducing tee
flow
cap
sleeve
valve
swaging
flaring
flare nut
solder
sweat
tank
gauge
acetylene
propane
striker
gas
regulate
pressure
lead
acid
tin
brazing
rosin
flux
kerosene
hydrochloric acid
film
cleaning agent

mold
bond
P-trap
sanitary T
sanitary Y
CPVC
ABS
DWV
rigid
flexible
vent stack
PSI
semi-rigid
coil
rolled
waste pipe
waste sicle
specifications
deburring
polyethylene
screw clamp
bird
riser
lavatory
mixer valve
position
solvent
cement
bind
non-toxic

combination solvents
non-synthetic
applicator
swab
mixing valve
fixture
commode
rough-in
diagrams
blue print
stub out
sketch
wall cavity
drain pipe
stud wall
center line
decking
subfloor
upright
align
drain stop
clean out
horizontal
vertical
blueprint
slope
slant
building code
hangers
lay out

roof flashing
vent pipe
stress
circumference
roller
skim
level
plumb
slip nut
washer
faucets
water closet
bolt
tension
ferrel
snug
hot on left
cold on right
set
specifications
putty
o-ring
source line
cut-off valve
compression seal
copper to steel adaptor
oakum
lead
caulking
nominal sizes

1. Mathematics

   A. Fractions

      1. Nominal Pipe sizes
      2. Outside diameters of pipes
      3. Inside diameters of pipes
      4. Die sizes
      5. Wrench Sizes
      6. Pipe lengths
      7. Pipe reducers - 1/2x3/8 1x3/4 1 1/2x1 1/4

   B. Division and Multiplication

      1. Calculate amount of pipe or number of fittings needed for a given job.
      2. Compute cost of materials for a given job.

   C. Decimals

      1. Use pipe tables to determine actual outside diameter (in decimal) for a given nominal size outside diameter

   D. Geometry

      1. Use pipe fittings to discuss angles.

   E. Measurement

      1. Use tables to compute pipe size needed to obtain a given water flow.
      2. Temperature - use solder melting points to discuss temperature, use furnace settings to discuss temperature.
      3. Use "Degree Day" to calculate fuel consumption.

II. Language Arts

A. Use Plumbing terms for:

1. Spelling quizzes

2. Dictionary work

3. Vocabulary building

B. Write reports/essays/stories using plumbing vocabulary words.

C. Use pictures of Plumbing tools and materials to increase vocabulary.

D. Use booklets available from Plumbing supply houses as reading material.

E. Have students make oral presentations in which they describe their various work experiences in the Plumbing Area.

F. Use pictures of Plumbing Tools to test students on their vocabulary and pronunciation.

G. Have students fill out a bill of materials for an upcoming or hypothetical job.

III. Social Studies

A. Discuss the Plumber's apprenticeship Program.

B. Discuss the role of the Labor Union in America.

C. Have students discuss the importance of doing a job right the first time.

IV. Science

A. Discuss Pascal's Law as it relates to water pressure and Pipe strength.

B. Discuss the principle of operation of the household toilet.

C. Determine and compare the cost of heating a home for a year using Oil, Natural Gas and Electricity.

D. Discuss how the following residential heating systems work.

1. Hydronic System (Series loop and two pipe system)

2. Gravity Hot water

3. Gravity Hot air

4. Forced warm air

5. Electric heat

E. Describe how Gas and Oil Burners work.

F. Discuss the operation of the heat pump.

G. Discuss the scientific principles upon which a typical central Air Conditioner operates.

H. Discuss the ecological effects of an improperly installed septic tank and leaching field.

SOME CAREERS ASSOCIATED WITH THE PLUMBING AREA

Plumber

Plumbing Supply House Salesman

Plumber's Assistant

Oil Burner Repairman

Air Conditioning Repairman

Solar Heating Installer

Pipe Fitters

Fire Sprinkler System Installers

Ship-fitter

PART III

OCCUPATIONAL EXPLORATION PROGRAM
RECORD FORMS

STUDENT: _____ 102.

SUPERVISOR _____

Occupational Exploration Area _____

Personal Characteristics (continued)

Please evaluate by placing an "X" in the proper column.

	EXCELLENT	GOOD	AVERAGE	FAIR	POOR	DOES NOT APPLY
RELATIONSHIPS						
Accepts instruction						
Cooperates with fellow students						
Cooperates with supervisor						
Personal appearance						
Personal hygiene						
Respects others and their opinions						
Provides sound and reliable information						
Keeps supervisor informed of activities and/or problems related to his/her work						
LEADERSHIP						
Desire to learn						
Self confidence						
Memory						
Sets good example						
Inspires confidence of others						
Owns up to his/her mistakes						
Expresses himself effectively						
POTENTIAL IN OCCUPATIONAL EXPLORATION AREA						
Learns rapidly						
Seeks additional knowledge						
Makes full use of available information						
Continually seeks to improve his/her performance						
Suggests improvements in exploration area						
Chance for success if pursues more training in this area						

STUDENT: _____ SUPERVISOR: _____

PERSONAL CHARACTERISTICS

OCCUPATIONAL EXPLORATION AREA _____

Please evaluate by placing an " X " in the proper column.

	EXCELLENT	GOOD	AVERAGE	FAIR	POOR	DOES NOT APPLY	
WORK PERFORMANCE							
Understanding of job							
Quantity of work							
Quality of work							
Use of tools, materials, equipment							
Organization of work							
Ability to solve problems							
Works independently							
Displays sound thinking judgment							
MOTIVATION							
Initiative							
Punctuality							
Persistence							
Accepts Responsibility							
Accepts Criticism							
Accepts Advice							
Does more than is required							
Performance under pressure							

WORK EVALUATION
LONG LANE SCHOOL

Student: _____ Date: _____

Period Rated: _____ Rater: _____

Job Assignment _____

CATEGORY	Poor	Below Average	Average	Above Average	Superior	Comments:
I. Appearance						
a. Clothing						
b. Personal Hygiene						
c. Grooming						
d. Affect						
II Character Traits						
a. Politeness						
b. Friendliness						
c. Ability to Communicate						
d. Enthusiasm						
e. Alertness						
III Responsibility						
a. Punctuality						
b. Honesty						
c. Reliability						
d. Seeks guidance						
e. Attendance						
IV Cooperation						
a. With co-workers						
b. With Supervisors						
V Tolerance						
a. Physical Stamina						
b. Initiative						
c. Accepts Criticism						
d. Deals with Frustration						
e. Attention Span						
f. Interest						
g. Job Pressure						
VI Job Skills						
a. Follows Directions						
b. Speed						
c. Accuracy						
d. Flexibility						
e. Works independently						
f. Ability to make decisions						

OCCUPATIONAL EXPLORATION EXPERIENCE

Student's Name: _____

Student Identification Number: _____

Occupational Exploration Area: _____

Supervisor's Name: _____

Date of Participation: _____

From _____

To _____

Total Number of Hours in Area: _____

Final Grade: _____

Basic Skills _____

Personal Characteristics _____

Comments: _____

_____

_____

_____

OCCUPATIONAL EXPLORATION EXPERIENCE SUMMARY SHEET

STUDENT NAME: _____

STUDENT IDENTIFICATION NUMBER: _____

	Occupational Exploration Area	Dates in Area	Hours in Area (Total)	FINAL GRADE		Recommendation or Comments
				Basic Skills	Personal Characteristics	
1.						

PART IV

REFERENCES

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